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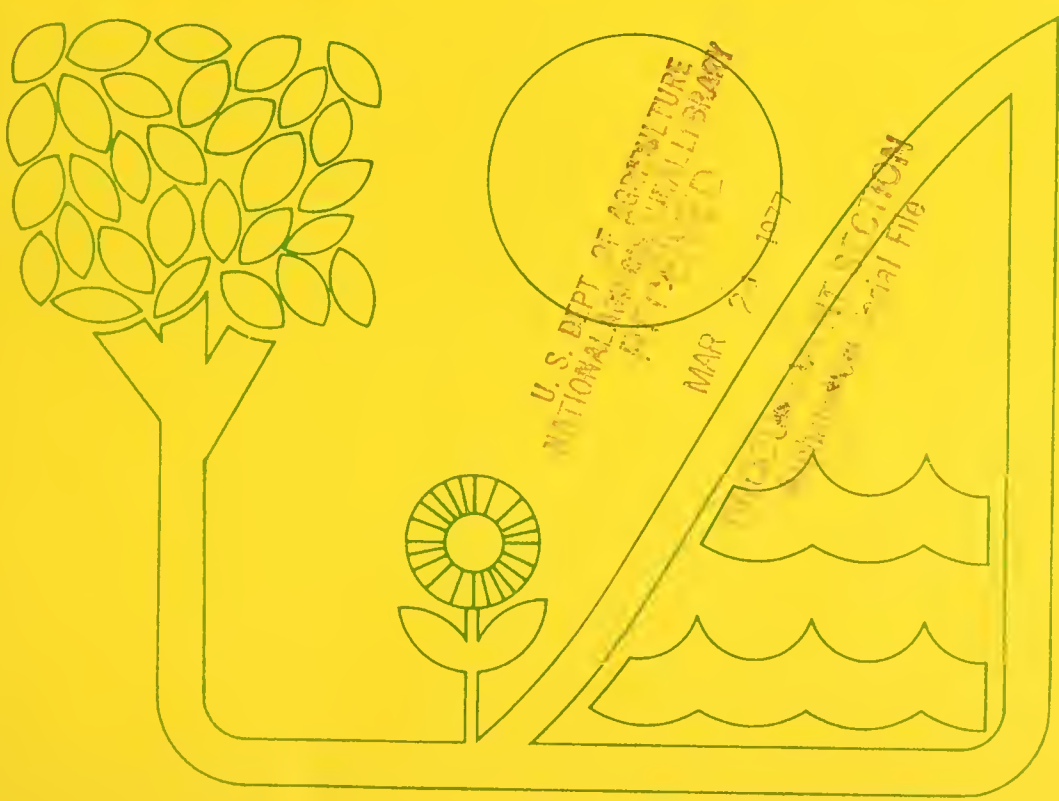
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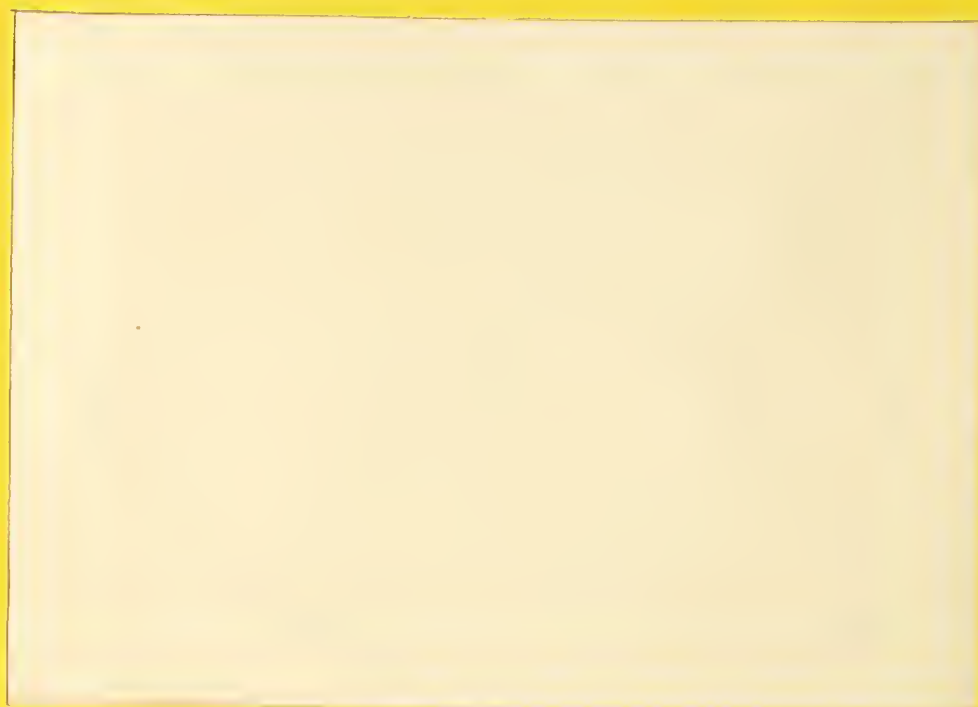
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ENHANCING WATERFOWL HABITAT:
ALTERNATIVES IN NORTHERN
MISSISSIPPI RIVER DELTA WATERSHEDS

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ABSTRACT

A survey of 46 landowners, or their representatives, indicated 13 received income for providing waterfowl habitat and/or hunting rights to hunters. Gross income per acre ranged from \$0.33 to \$11.43 and averaged \$3.54, while gross income per enterprise averaged \$5,250 and ranged from \$1,000 to \$20,000. Waterfowl habitat can be enhanced by providing food and water areas by individual landowners or through group action such as Small Watershed Projects. Inclusion of water level control devices in channels and judicious placement of spoil can provide significant areas of waterfowl habitat.

Key Words: Waterfowl Habitat, Small Watershed Projects, Market for Waterfowl Hunting Rights, Enhancement Practices.

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SUMMARY

A survey of 46 landowners or their representatives provided data on existing waterfowl hunting enterprises in the Mississippi River Delta in Arkansas, Missouri, and Tennessee. Only 13 of the respondents received income for the services provided. Their gross income ranged from \$0.33 to \$11.43 per acre and averaged \$3.54. Gross income per enterprise averaged \$5,250 but ranged from \$1,000 to \$20,000.

The other respondents were representatives of clubs (13), landowners providing hunting for themselves and friends free of charge (9), joint owners of land providing hunting and/or other services (4), and owners or operators of related facilities and/or services (7).

Additional waterfowl habitat can be provided by interested landowners. Practices that enhance the environment as a habitat for waterfowl include delay of fall tillage operations to let waterfowl harvest grain left in fields, flooding fields and/or woodland by catching or diverting normal runoff or by pumping, leaving a portion of grain fields unharvested, and planting food plots for waterfowl feeding. The practices used will depend on the costs of each and their relationship to income derived from the waterfowl habitat.

Individual landowners may engage in waterfowl hunting enterprises, but group action through the Small Watershed Program or similar programs offers a means of enhancing farm income as well as environmental quality in the form of more and better waterfowl habitat. Inclusion of water level control devices in channels and judicious placement of spoil can provide significant areas of waterfowl habitat and encourage similar action by adjacent landowners.

ENHANCING WILDLIFE HABITAT: ALTERNATIVES IN
NORTHERN MISSISSIPPI RIVER DELTA WATERSHEDS

by

Otto P. Thiemann*

PURPOSE OF STUDY

Procedures for water resource planning can include plans emphasizing environmental quality, in addition to national economic development. One important aspect of environmental quality in the Mississippi River Delta is waterfowl habitat and hunting. This report explores the potential for waterfowl hunting enterprises in the flatland areas adjacent to the Mississippi River. The findings may be applicable to other areas with similar topographic features.

The role of the U.S. Department of Agriculture (USDA) in waterfowl habitat research is closely related to several concerns of the Department. They are: 1) meeting the demands of all people for not only food and fiber production but also other services such as recreation, open space, agricultural landscapes, etc.; 2) increasing the income of rural residents; 3) using land according to its capability; and 4) group action to accomplish the above goals in the most efficient manner. Multipurpose use of land and water resources through group action can provide an abundance of food and fiber crops, recreation opportunities, and opportunities for increased income for resource owners and operators.

A more specific purpose of the study was to determine if the market mechanism could partially alleviate the apparent conflict of interest between

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landowners in Delta watersheds and waterfowl hunters brought about by clearing and drainage activities.

OBJECTIVES

Some landowners in the Mississippi Flyway (one of several waterfowl migration routes) manage some or all of their property to attract waterfowl. Some provide fee hunting to the public, while others provide hunting privileges by invitation only. Often a group of individuals will form a club, buy property, and manage it for duck hunting. Some hunting lodges are owned by one or more business firms which use the property to entertain their own personnel, as well as current and prospective clients.

Many local landowners are reluctant to consider wildlife enhancement because they prefer to avoid hunters and trespassers, or they are unaware of the potential returns from the lease or sale of hunting privileges and/or access rights. The extent of the market for hunting rights is unknown. Potential costs and returns of developing an enterprise and marketing hunting rights need to be analyzed in the context of the whole farm setting.

Objectives of the study are to examine potential demand for waterfowl hunting on agricultural lands, to appraise the potential for meeting the demand on agricultural lands, and to identify methods for providing waterfowl habitat to hunters.

PROCEDURES

Physical coefficients to prepare income budgets for waterfowl hunting enterprises were not readily available to economists. Therefore, the services of Soil Conservation Service (SCS) and Department of Interior (DI) biologists were solicited. They assisted in developing the questionnaire and reviewing this report.

The National Association of Soil Conservation Districts inventoried recreation enterprises on privately owned land. This inventory classified enterprises as profit and nonprofit oriented. Although these terms were not interpreted uniformly by the individuals providing the inventory, the inventory was very useful. The list of landowners and/or operators engaged in providing hunting rights for lease or sale was based on the above inventory. Local and State SCS officials in Arkansas, Missouri, and Tennessee assisted in correcting the list.

A sample of the identified landowners involved in waterfowl enterprises was interviewed to determine the physical characteristics of the land they used, other necessary investment(s), costs and returns, management and other problems, sale and lease arrangements, suggested improvements, and other information necessary for successful operation of hunting enterprises. An attempt was made to contact all who conveyed hunting rights to the public, as well as a sample of clubs engaged in waterfowl hunting activities.

Interviews were conducted during August 1974. A significant number of the potential respondents disclaimed any knowledge of waterfowl hunting on their premises, especially for money. Some reservoirs had been drained and were now being farmed. Many respondents provided waterfowl hunting only for themselves and their friends. These cases provided no information on sale of waterfowl hunting rights. Several other respondents leased their property to a club or clubs. They preferred to deal with only one member of the club and left much of the water and hunting management to the club. Still others offered daily hunting rights and provided all of the hunting and water management.

About two persons were contacted for every interview conducted (90 persons contacted to obtain 46 interviews). However, the data collected were sufficient to draw some implications with respect to the market for waterfowl hunting rights. Recent rapid changes in prices of inputs and outputs quickly outdate reasonably accurate data at time of collection anyway. A broad spectrum of conditions was recorded during the interviews. Therefore, most situations are covered by the ranges established. Since man has little control over the wide variation in physical factors (rainfall, temperature, etc.), errors in economic data would tend to be insignificant.

EXISTING WATERFOWL ENTERPRISES

The 46 schedules taken were grouped into 5 categories to show differences and similarities among the respondents. The categories are as follow: owners and/or operators who received income (13), owners and/or operators who did not receive income (9), nonprofit clubs (13), multiple ownerships (4), and owners and/or operators of related facilities such as boat rental and/or lodging units (7).

Table 1 presents values of selected items for each of the groups. Clubs controlled the most land and water area during waterfowl hunting season (23,620 acres), followed closely by income-receiving operators (19,290 acres). Generally, clubs held fewer land rights than did other operators. The area owned and/or leased by clubs represents a range of land rights from full ownership to leasing of hunting rights only. The largest tract involved in the study was 8,000 acres, which was leased for \$1 annually. Several leases involved hunting and trespassing rights on and around irrigation reservoirs. One tract was leased for farming and in turn was subleased for hunting.

Land use percentages are provided in Table 2. The percentage of woodland

Table 1--Land use and other characteristics of waterfowl hunting enterprises

Item	Unit	Group					Total
		Income (13)	Clubs (13)	Non- income (9)	Multiple: owners (4)	Related: services (7)	
Land & water area	Acres	19,290	23,620	11,490	1,535	441	56,376
Cropland	Do.	9,010	2,725	8,680	560	45	21,020
Water	Do.	4,984	5,985	645	213	61	11,888
Woodland	Do.	4,581	10,000	1,632	762	169	17,144
Flooded	Do.	5,295	3,270	1,690	870		11,125
Hunter days	No.	5,325	3,130	736	640		9,831
Waterfowl taken	Do.	11,716	6,460	1,689	1,510		21,375
Income	Dols.	68,215				2,135	70,350
Flooding costs	Do.	17,060	4,300	1,900	3,450		26,710

Table 2--Land use percentages and hunter-day coefficients of waterfowl hunting enterprises

Item	Group					Total
	Income	Clubs	Non- income	Multiple: owners	Related: services	
	<u>Percent</u>					
Cropland	46.71	11.54	75.54	36.48	10.20	37.29
Water	25.84	25.34	5.61	13.88	13.83	21.09
Woodland	23.75	42.34	14.20	49.64	38.32	30.41
Other	3.70	20.78	4.65		47.65	11.21
Flooded	27.45	13.84	14.71	56.68		19.73
	<u>Number</u>					
Hunter day/acre	.276	.132	.064	.417		.174
Acres/hunter day	3.62	7.55	15.61	2.40		5.73

on respondent holdings is somewhat higher than the average of all farms in the area. About 25 percent of the area controlled by clubs and income operators is water, and this suggests a high suitability for waterfowl habitat. There are irrigation reservoirs on 7 of these 26 units. Those clubs without permanent water area on their holdings flood from 250 to 700 acres, thus providing adequate water surface for waterfowl. Several tracts are almost completely inundated during the hunting season. Over one-half (53.29 percent) of the income receiving property is water, 70 percent of the multiple owners' property is water, and about 40 percent of the area controlled by clubs is water. The nonincome property is only 20 percent covered by water.

Acres per hunter-day ^{1/} ranged from 0.6 to 106.7 and averaged 5.7. The multiple ownership group reported the best group coefficient (2.4), followed by the income receiving group (3.62). These values suggest more intensive management for waterfowl hunting by the above groups compared to the club and nonincome receiving groups.

Gross income for income receiving enterprises ranged from \$0.33 to \$11.43 per acre and averaged \$3.54. Income received per enterprise ranged from \$1,000 to \$20,000 and averaged about \$5,250. Enterprises ranged from 210 to 6,000 acres and averaged about 1,500 acres. Seven of the enterprises were under 1,000 acres and six were larger. The average gross return for those under 1,000 acres was \$2,674 or \$4.41 per acre. Average gross returns for the larger enterprises were \$8,250 or \$3.29 per acre. There is no consistent trend in income per acre as acreage increases except the three largest units returned the least income per acre. Perhaps the optimum enterprise size is less than 2,200 acres.

^{1/} Defined as participation by one person in hunting during one day or portion thereof.

An annual lease to a club was the marketing method used by 5 of the 13 income receiving enterprises, while 4 charged daily fees. Two other firms received the annual fee directly from the hunters, and the remaining two used a combination of the three means. The leases ranged from \$2,000 to \$20,000 per annum and represented average returns of from \$2.94 to \$11.43 per acre. The average gross income for the five enterprises leasing yearly waterfowl hunting rights was \$6,700 or \$6.75 per acre.

Some entrepreneurs lease the land and have the lessee provide for flooding, food plots, game management, and the like. Other lessors provide services besides the raw land area, and so experience additional costs. The cost of flooding land is usually the largest cost, but providing food plots can also be costly. Other costs include building and maintaining blinds, providing decoys and transportation, road maintenance, and other related costs.

Enterprises collecting daily fees had the highest labor requirements and the most variable income. These operators usually furnish transportation to the blinds, set out decoys, serve as callers, and perform other services. When the weather is unfavorable or the ducks do not come in, income to the enterprise is limited. Unfavorable weather includes excessive rainfall, which creates an abundance of cover and food for waterfowl, or abnormally hot or cold weather, which drives the waterfowl north or south during the hunting season.

Twenty-seven respondents reported problems (table 3). Trespassing in one form or another was recorded 10 times, or on about 22 percent of all replies. The split duck season was mentioned 5 times, as was the shortage of ducks. Unfavorable weather conditions were mentioned by 4 respondents, and 2 each noted the possibility of lead contamination in heavily hunted areas,

Table 3--Problems and solutions indicated by waterfowl hunting enterprise representatives

Item	Group					Total
	Income	Clubs	Non-income	Multiple owner	Related services	
Problems	16	12	10	8		46
Trespassing	1	3	4	2		10
Unfavorable weather	2			2		4
Duck shortage	1		2	2		5
Other	12	9	4	2		27
Solutions	11	9	8	4	2	34
Cost share for:						
habitat	1	3	2		1	7
More public hunting areas	1			1		2
Way to hold ducks in area	1	1				2
Other	8	5	6	3	1	23
Market for more waterfowl hunting						
Yes	11	8	8	4		31
No		1				1

the apparent change in duck feeding habits from the woods to the rice fields, and the requirements for safe hunting rules. Other problems mentioned were concern about land clearing, not enough wildlife habitat, infeasibility of keeping land for waterfowl hunting only, need to retain woodland by tax incentive(s), destruction of wildlife food with fall tillage, allow hunting only in the mornings, too many hunters for the ducks available, illegal hunting, waterfowl changing their migration patterns, beaver kill of timber which reduces the wildlife value of the woodland by reducing summer production of

waterfowl food, liability insurance problems, road maintenance, litter, and waterfowl hunting too expensive for local people.

Suggestions for improving waterfowl hunting were offered by 27 respondents, including 5 who did not mention any problems. Seven of these suggestions were for government cost-sharing with farmers for flooding cropland and/or providing feed and rest areas. Four respondents suggested that managed water control could provide more habitat than natural conditions. Another four respondents praised the Ducks Unlimited ^{1/} program because it spends money for breeding areas. Two felt that someone "needed to do something to hold ducks in the area," and two felt that "the Corps of Engineers' drainage program should be halted." Other proposals mentioned were: change hunting season, manage and provide more public hunting areas, raise license fees to provide matching funds to help provide more public hunting areas, and provide means of underwriting loans for recreation facilities.

POTENTIAL FOR WATERFOWL ENTERPRISES

The findings of the survey plus information on daily waterfowl food requirements were used to assess the economic potential for waterfowl hunting

^{1/} Ducks Unlimited is a nonprofit organization formed in 1937 to preserve and enhance waterfowl resources. Contributions from members are used to construct and maintain water control structures, primarily in Canada where U.S. Federal duck stamp funds cannot be used.

Water control in Canada is the first objective of Ducks Unlimited. Long-term, no-cost leases are obtained on existing or potential wetlands from private and public land holders. Then water-control structures are created to maintain proper and constant levels. This long-range program is at work today at over 1,000 Ducks Unlimited project areas, covering 2 million acres of prime habitat for 250 species of birds, 60 different mammals, and 19 types of fish.

enterprises in the study area. This assessment considers the physical requirements of waterfowl habitat, means of improving habitat, and the demand for waterfowl hunting. Then, some possibilities of including waterfowl hunting activities on individual farms and in small watershed project areas are addressed.

Physical Requirements

All wildlife requires food and cover. In the case of waterfowl, cover may consist of water and/or vegetation. Thus, wetlands with woody vegetation serve as ideal habitat.

There is little published data on daily waterfowl food requirements. A Forest Service Handbook ^{1/} and Dr. Leslie Glasgow, ^{2/} Louisiana State University, indicated that larger waterfowl (mallards) require about one-fourth pound per day of solid food such as mast, rice, milo, soybeans, weeds, and other plants. Smaller waterfowl require less, but one-fourth pound is used in this analysis.

Estimation of the capacity of various areas for waterfowl can be done as follows: Arkansas County, Arkansas, a Mississippi Delta County, is 662,400 acres in size. About 7,000 acres is in water, 17,000 acres in urban and built-up, 59,000 acres in Federal land (White River National Wildlife Refuge), and about 580,000 acres in agricultural uses. Land use in 1973 was cotton, 3,700 acres; wheat, 600 acres; milo, 3,300 acres; rice, 93,400 acres; and soybeans, 206,000 acres; plus about 200,000 acres of forest. Cotton provides very little food or cover for waterfowl, and the wheat crop is insignificant.

^{1/} Wildlife Habitat Management Handbook, Southern Region, FSH 2609.23R, USDA, FS, Atlanta, Ga., Feb. 1971, 407.12.

^{2/} Phone conversation 4/4/75.

Mast production on woodland is estimated at 50 pounds per acre. Waterfowl can also harvest other forage plants if available. Published information on normal harvesting losses of grain sorghum and rice is not readily available, but estimates provided by the Extension Service indicate these losses range from 2 to 5 bushels per acre for milo, 1/2 to 20 bushels or more for rice, and 1/2 to 5 bushels per acre for soybeans. Using the lower values and current cropping patterns, the amount of food available for waterfowl and other wildlife in Arkansas County is 10 million pounds of mast, 370,000 pounds of milo, 2.1 million pounds of rice, and 6.2 million pounds of soybeans, for a total of about 18.65 million pounds of food. Since one duck can live for four days on one pound, the minimum food supply would be about 75 million waterfowl feed days, or enough to maintain 200,000 waterfowl year round, if the feed was stored and rationed during the year. Proportionately more ducks could live for shorter periods of time (e.g., 0.6 million for 120 days). If average harvesting losses are 3, 2, and 2 bushels per acre respectively for milo, rice, and soybeans, the potential food supply would increase to 43.68 million pounds, or about 175 million waterfowl feed days--enough to feed 480,000 waterfowl all year. These values show that a large quantity of food is produced and theoretically available for waterfowl. In practice, it is not all available. Other wildlife eat some of the food. More importantly, other factors may limit waterfowl more than available food supply--for example, lack of cover, insufficient water area, and tillage operations completed too soon after harvest. Grain on the ground would have little food value after March as it likely sprouts, decomposes or is covered by tillage operations.

Enhancing Waterfowl Habitat

Most hunters and many landowners would like to see more waterfowl in the study area. What can be done to bring this about? Normal crop harvesting losses provide enough food for waterfowl in most counties, unless the fields are tilled soon after harvest. But landowners and operators can increase food availability by making some minor adjustments in their normal operations. The least expensive practice is delaying tillage operations until the hunting season is over. Leaving a portion of the crop unharvested entails greater cost but permits better control of waterfowl. For example, the unharvested crop might be left adjacent to existing blinds in the field or next to a wooded area. A more expensive practice to provide food is planting wheat, milo, corn, millet, rice, or another crop specifically for waterfowl. This is sometimes done in cleared areas within or on the edges of wooded areas, or along the edges of a reservoir. Surface planting may be feasible in many locations, but aerial seeding permits planting in areas too wet for ground operations.

Cover for waterfowl can be bodies of water and/or areas of woods and woody vegetation. Wetlands may provide both water and woods, along with some food. Green-tree reservoirs provide attractive conditions for waterfowl, as do flooded rice, soybean, milo, and corn fields. The water needs to be only a few inches deep, except for the diving ducks which require a water depth of 12 to 18 inches or more.

The water area may be natural lakes or streams, reservoirs, or any form of temporary impoundment. The lowest cost impoundment involves closing gates in rice fields to hold rainfall. Another means is to divert surface runoff into a diked area of fields or woods. The most expensive means is to pump ground water into stubble fields and/or green-tree reservoirs.

Hunting Demand

There is a market for more waterfowl hunting in the opinion of 31 of 32 respondents asked. While not quantifiable, this should be encouraging to potential suppliers of waterfowl hunting rights.

The Arkansas Statewide Comprehensive Outdoor Recreation Plan - 1974 (SCORP) presents demand and need data for 19 different outdoor recreational activities, one of which is waterfowl hunting. ^{1/} Over two-thirds of the current and projected activity occasions originate in the Little Rock metropolitan area and about one-eighth in the 12-county eastern region of Arkansas. Projections for the latter region probably underestimate the influence of the populous Memphis area on waterfowl hunting opportunities in Arkansas. Table 4 shows present and projected demand for waterfowl hunting in Arkansas. The regions referred to in the table are outlined in figure 1.

Each acre of waterfowl hunting habitat will produce 4.5 activity occasions per year, according to the SCORP report. This figure could be realized

^{1/} Hunting demand as used in the SCORP report is not economic demand but still provides useful information. Recreation demand is the demonstrated ability and desire of people to use recreation facilities, areas, and resources (SCORP, p. 171). This report equates hunter-days and activity occasions. The survey revealed a market for waterfowl hunting but was not designed to construct the demand for it. The SCORP projected needs are based on the State providing for 85 percent of the projected hunting activities. The remaining 15 percent may be the market portion. This market could expand greatly if fee hunting provided better hunting opportunities, hunters seriously intended to harvest waterfowl on a given trip, and hunters decided that fee hunting was not socially degrading.

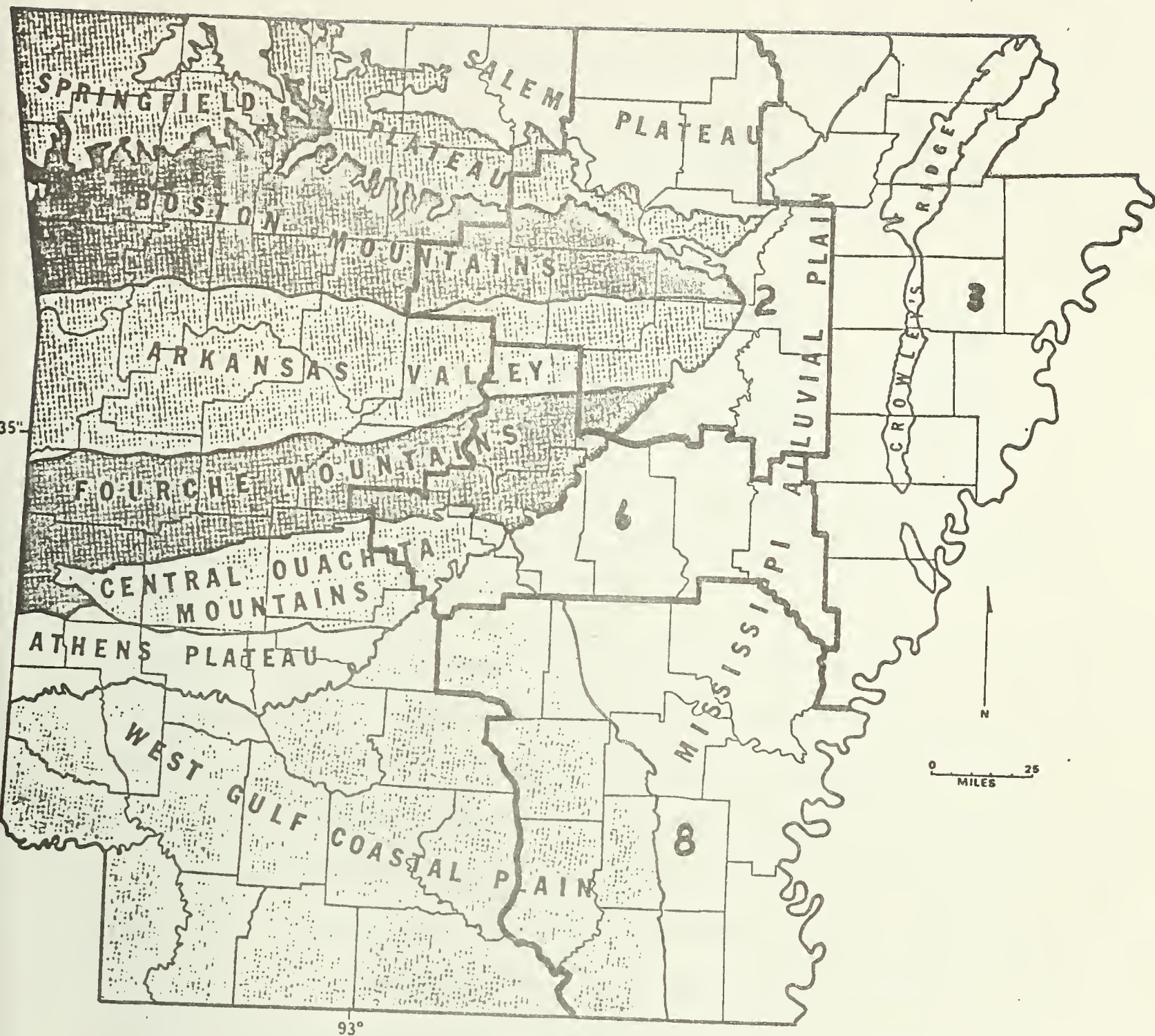


Figure 1--Physiographic and SCORP Data Collection Regions, Arkansas

Key:

- 2. White River
- 3. East
- 6. Central
- 8. Southeast

The data collection regions coincide with the Arkansas Planning Districts.

Source: SCORP, figures 1 (opp. p. 11) and 22 (opp. p. 30).

Table 4 --Present and projected demand for waterfowl hunting

Area	Activity occasions			
	1975	1980	1985	1990
	<u>Number</u>			
Region:				
2	171,236	117,619	128,365	140,371
3	378,716	389,175	412,596	438,908
6	2,076,929	2,304,121	2,657,430	2,997,314
8	77,726	86,192	93,220	99,448
Total	2,704,607	2,897,107	3,291,611	3,676,041
State	3,011,715	3,225,356	3,656,972	4,089,242

Source: Table 11, Statistical Summary Report, SCORP, pp 24, 26, 27, 30, and 32.

under ideal conditions but appears optimistic for average conditions. However, if the SCORP coefficient of 4.5 occasions per acre is appropriate, projected additional needs for waterfowl habitat in Arkansas are 101,191 acres in 1975, 158,853 in 1980, 251,977 in 1985, and 341,897 in 1990. ^{1/}

About one-third of Arkansas (the Delta or the Mississippi Alluvial Plain in fig. 1) has a high potential for meeting waterfowl habitat needs in the future. The predominant land use is cropland, but sufficient forested and prairie areas remain to develop attractive waterfowl habitat.

^{1/} Statistical Summary Report, Arkansas Statewide Comprehensive Outdoor Recreation Plan, 1974, Arkansas Department of Planning, Little Rock, Ar, p. 357. The enterprises surveyed reported as many as 1.67 hunter days per acre, but few enterprises permit hunting on all of the area managed for waterfowl. Thus, both values may be valid. The lower value suggests a better chance of bagging the limit.

There are 3 national wildlife refuges in the Delta, along with 1 national forest and 11 State wildlife management areas. Two other State wildlife management areas are just outside the boundary of the Delta. Using an additional 1 percent of the Delta for waterfowl habitat could supply the SCORP estimated current need for waterfowl habitat and 3 1/2 percent additional could meet the projected need in 1990.

The Waterfowl Hunting Enterprise in a Whole Firm Setting

Most waterfowl habitat enterprises in the Delta are not single-product businesses, although some enterprises provide recreation opportunities essentially year round. The primary income source of many recreation oriented firms is fee fishing. Fee fishing requires permanent water area, so the only management practices necessary for waterfowl hunting are closing the fishing enterprise about two weeks before waterfowl hunting begins and preparing the blinds. A few acres of rice, corn, or soybean stubble provide some feed; and the reservoir would provide cover and also some food. The fee fishing enterprise can be resumed immediately after the waterfowl hunting season closes if the weather permits and the proprietor is so inclined.

Most waterfowl hunting enterprises are carried on in conjunction with normal agricultural cropping activities, usually cash crops. The scope of the waterfowl enterprise ranges from mere trespass rights to integrated management of normal field crops and waterfowl habitat production.

The extensive waterfowl habitat enterprises most likely involve a payment for seasonal hunting rights and perhaps closing gates in rice fields to retain precipitation. If blinds are not in place and no wooded area is nearby, some expense for installation of blinds is necessary. Once installed, annual maintenance is required.

Income is assured if an annual lease is used. Income may be difficult to estimate if daily fee hunting is carried on. Inclement weather may discourage waterfowl and/or hunters from frequenting the premises. On the other hand, the daily fee basis may allow the greatest opportunity to maximize income.

The enterprises surveyed tended to be located rather close to each other rather than randomly dispersed throughout an area. This suggests that adjacent enterprises may be complementary rather than strictly competitive to each other. Thus, neighboring landowners might form partnerships or cooperatives to enhance waterfowl hunting enterprises. Owners of small tracts might cooperate with owners of larger tracts to acquire sufficient area of a diversified nature and to pool risks and abilities and be able to handle a larger number of hunters or a group, or groups, of hunters (hunting clubs).

Waterfowl Enterprise Income and Expenses

The survey data are deficient in information on practices used and their costs. However, the data permit building some partial budgets which could be used to assess the economic feasibility of waterfowl enterprises. The income per acre ranged from \$0.33 to \$11.43, while enterprise income ranged from \$1,000 to \$20,000, and averaged about \$5,250. Costs ranged from \$10 to \$7,000 for those reporting costs (four reported no costs). The reported gross of the 13 enterprises was \$62,215 vs. reported costs of \$20,300 for a net of \$47,915. Net income ranged from \$2,000 to \$17,500.

The following work table lists activities related to waterfowl hunting enterprises. Situations are listed starting with the most labor

Table 5--Waterfowl enterprise income and expenses

Item and cost	Situation			
	: Lease to per-:	: Lease plus :	: Operate :	: Daily fee
	: son(s) or :	: services :	: a club :	: basis
	: club(s) :	:	:	:
Income	: $\frac{\$3,000}{400 \text{ ac.} \times \$4} =$			$\frac{100 \text{ hunter days}}{\times \$20} = \$2,000$
	: <u>\$1,600</u>			
Costs:				
Prepare lease <u>\$25</u>	: X	X	0	
Flood <u> </u> acres	:	0	0	X
<u> </u> cropland and	:	0	0	0
<u> </u> woodland	:	0	0	0
Close gates to hold	:			
precipitation <u>\$20</u>	:	0	0	0
Release from reser-	:			
voir <u>\$50</u>	:	0	0	0
Pump from channels	:			
<u>\$2 per acre</u>	:	0	0	0
Pump groundwater	:			
<u>\$4 per acre</u>	:	0	0	0
Provide food plots	:			
Leave $\frac{1}{2}$ acre un-	:			
harvested (yield x	:			
price = cost)	:	0	0	0
Sow millet, rice, etc:	:			
(seed + tillage +	:			
labor = cost)	:	0	0	0
Install blinds <u>\$50</u>	:	0	0	X
Maintain blinds <u>\$10</u>	:	0	0	X
Provide lodging (old	:			
house, mobile home,	:			
etc.)	:	0	0	0
Provide food	:	0	0	0
Provide transportation	:	0	0	X
Farmstead-blinds	:	0	0	X
(.25 per mile)	:			
Serve as guide and or	:			
caller	:	0	0	X
Clean & freeze waterfowl	:	0	0	0
Other-supplies, etc.	:	0	0	0
Total expenses	:			
Returns to land, general	:			
overhead, and mgt.	:			

X - Required 0 - Optional

extensive and ranging to the most labor intensive. Underlined values in the first column approach the average of those reported in the survey and are reference points only. The income figures illustrate three ways of estimating income--a lease for X dollars, a lease for Y acres at X dollars per acre, and an estimate of X hunter days at X dollars per hunter day. These should assist in calculating expected costs and returns for a prospective enterprise. Most costs are marginal and assume no decrease in the service life of equipment. If pumps or other machinery are used enough hours to reduce their service life, upward cost adjustments are warranted.

Problems

Problems encountered in operating waterfowl habitat enterprises can be classified into biological, economic, and institutional. The first type is largely beyond man's control, so adaptation is the only alternative. Weather is one such factor. Above normal precipitation during and immediately before the hunting season creates additional cover for waterfowl and lessens their dependence on flooded fields and green-tree reservoirs for food and cover. The increased cover conditions may also provide additional food in the form of flooded, unharvested soybean fields. Abnormal temperatures also affect the number of waterfowl in a given area during the hunting season. Mild temperatures induce waterfowl to winter farther north, and colder temperatures drive them farther south.

Clearing of woodland in the flyway reduces cover for waterfowl. Tax incentives may keep some land in woodland, and purchase of natural areas helps alleviate this problem, but reduction of woodland clearing through other governmental action does not have much economic and political feasibility.

Are waterfowl changing their migration patterns? Some respondents to the questionnaire suggested that waterfowl may be changing their migration patterns and that there was a shortage of waterfowl. These problems could be caused by people. Some habitat may have been established in areas away from the flyway, thus changing migration patterns. Also, habitat can be destroyed by nature as well as by people. Tornadoes have nearly leveled wooded areas, thereby reducing habitat for many kinds of wildlife. Beavers can reduce waterfowl habitat when their dams result in killing trees.

Economic Problems. Providing waterfowl habitat for sale to the public can involve considerable expense. The entrepreneur must recover his expenses if he is to remain in business. Users of the service must be willing to part with cold cash to ensure continuation of opportunities for waterfowl hunting.

The daily fee enterprises charged \$20 per hunter day in 1973 and \$25 per day by 1975. This price eliminates many prospective users of the facilities, but a definitive study of the elasticity of demand for waterfowl hunting is yet to be undertaken. The SCORP projections do not consider costs and returns of waterfowl hunting.

Most of the respondents felt there was a market for more waterfowl hunting, but no effort was made to quantify such a market. One respondent said that he could charge \$10 per hunter day, split that amount with the landowner and both would be financially ahead.

Hunters may join clubs to ensure hunting opportunities and to reduce the cost per hunter day. Their total outlay may be greater, but their per-day cost may be less if they hunt enough days.

Waterfowl hunting enterprises tend to be engaged in by landowners and operators who enjoy waterfowl hunting themselves. A few respondents received

a significant portion of their income from the waterfowl hunting enterprise, but many more provided the facilities as a bonus or courtesy for their employees, friends, and business associates. It would probably be very difficult to convince those landowners whose current income is satisfactory to them to install practices or facilities to enhance waterfowl habitat, even if a small profit could be shown. A more promising route to increase waterfowl habitat is to approach those landowners and operators who feel a need for additional income and provide them with information and sources of assistance to bring about the expected increased income.

Institutional Problems. Liability insurance has not been available at reasonable cost for many recreation enterprises, but only 1 of 27 respondents mentioned liability coverage as a problem.

Several of the respondents were perturbed at the split hunting season in 1973.. A split season may run from November 20 to December 10, and then from January 5 to February 5. If weather conditions during the two parts of the season were ideal for waterfowl, there would be few complaints. But if it were warmer than normal the first part of the season and colder than normal the second part, complaints would be plentiful. The ideal season would need to open earlier in northern Arkansas and close later in southern Arkansas to provide the greatest opportunity of harvesting waterfowl. The optimum season, however, can only be determined after the fact.

The incidence of small, marginal farms in the Delta is unknown. Waterfowl habitat could be one type of intensification that would not interfere much with other farming operations. However, survey data do not show the optimum size for waterfowl hunting enterprises. The range was from 210 to

6,000 acres. Thus, a 200-acre unit grossing \$4 per acre for waterfowl hunting would increase gross income \$800. This could be significant to the operator. The potential of cooperative ventures in this undertaking needs further study.

Waterfowl Hunting Enterprises in Small Watershed Project Areas

Small Watershed projects can be as large as 250,000 acres and usually involve many landowners. New or existing projects could be planned or modified to enhance waterfowl habitat.

The major feature needed to improve waterfowl habitat is to control water levels. Weirs help maintain year-round water surfaces (enhancing fish habitat also). Gates or diversion devices permit the control of water levels for fall flooding or diversion of runoff to stubble fields or green-tree reservoirs. A portion of the excavation material could be used to create a dike around a wooded area adjacent to the channel, or old natural channels might be dammed up to create bodies of water.

Watershed projects designed to enhance waterfowl habitat should consider how hunting rights might be marketed. Since projects involve large acreages, several hunting clubs could be accommodated by one project. Marketing would be simplified if one individual were responsible for negotiating leases and/or contracts with club representatives.

Providing more waterfowl habitat in the future may require cooperation between landowners and/or operators, State game commissions, and sponsors of watershed projects. Game commissions should explore the alternative of leasing farmland for waterfowl hunting, rather than owning the smaller hunting areas that are not full-time work for a resident manager. Several hundred to thousands of acres of soybeans, corn, and/or rice stubble could be flooded at

a cost equal to or less than the salary of a resident manager. The flooded acres could provide better waterfowl hunting than the unflooded wooded area.

Group action in providing waterfowl habitat has many advantages but may be difficult or impossible to achieve in some instances. This does not preclude individual landowners and/or operators installing enterprises for marketing waterfowl hunting rights. Assistance in planning for and installing waterfowl habitat enhancement practices is available from the Soil Conservation Service and also from State game and fish commissions. These agencies should be contacted if a waterfowl hunting enterprise is being considered. The information available from them, plus visits to established enterprises, should greatly assist the prospective supplier.

